UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/995,175	11/26/2001	Richard W. Molstad	10296US01	5427

7590 05/05/2004

Attention: Eric D. Levinson
Imation Corp.
Legal Affairs
P.O. Box 64898
St. Paul, MN 55164-0898

EXAMINER	
WONG, KIN C	

ART UNIT	PAPER NUMBER
2651	

DATE MAILED: 05/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/995,175	MOLSTAD, RICHARD W.	
	Examiner	Art Unit	
	K. Wong	2651	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 March 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 November 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 2.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims (1-5, 7-8, 10-21, 24-30) are rejected under 35 U.S.C. 102(b) as being anticipated by Tran et al (6134070).

Regarding claim 1: Tran et al discloses a servopositioning system for a data recording system (see col. 3, lines 11-17 of Tran et al), including in combination:

a) a linear data recording medium (or tape), upon at least a portion of which are written at least one amplitude-based servo signal, and at least one time-based servo signal (Tran et al discloses the amplitude-based servo in col. 9, lines 50-67 and the time-base (or phase-base or the size of the servo signals and/or the placements between the servo signals) in col. 5, lines 45-67 and col. 18, lines 23-65; and; figures 5A-6.); and

b) a circuitry (as depicted in figure 1 of Tran et al), separately responsive to the amplitude-based servo and time-based servo signals, for producing respective position error signals from each servo signal (Tran et al describes the

time (or phase) based servo and the amplitude based servo control functions in col. 7, line 50 to col. 8, line 35).

Regarding claim 2: Tran depicted in figures 13 and 14 (see associated descriptions for details) that the amplitude-based servo signal and the time-based servo signal are written to the medium on at least a portion of a common location (in view of instant figure 7) of the medium.

Regarding claim 3: Tran depicted in figure 13 and 14 (see associated descriptions for details) that the amplitude-based servo signal and the time-based servo signal are written to the medium in a common location (in view of instant figure 7) of the medium.

Regarding claim 4: Tran et al depicted in figure 1 (see associated descriptions for details) that which the circuitry separates the amplitude-based servo and time-based servo signals from a composite input.

Regarding claim 5: Tran et al teaches that the amplitude-based servo and time-based servo signals have respective absolute amplitudes (or full amplitude) that are controlled to provide linearity to the entire system (in col. 9, lines 50-67 of Tran et al).

Regarding claim 7: Tran et al teaches that the amplitude-based servo signal comprises a sine wave recorded band surrounding erased windows, the edges of which form a series of servo track pitches (in col. 9, line 50 to col. 10, line 63 of Tran et al).

Regarding claim 8: Tran et al teaches that the time-based servo signal comprises at least one sample, each sample comprising at least one pulse (or bit which Tran et al describes in col. 10, line 53 to col. 11, line 44 of Tran et al).

Regarding claim 10: Tran et al depicted in figures 13 and 14 (see associated description for details) that the amplitude-based servo signal and the time-based servo signal are written on different physical locations of the medium.

Regarding claim 11: Tran et al teaches that the amplitude-based servo signals have a track width approximately equal to a write track width (in col. 4, lines 4-17 and col. 4, lines 34-49 of Tran et al).

Regarding claim 12: Tran et al describes that the time-based servo signals have track width much less than track pitch (in col. 10, lines 26 to col. 11, line 14 of Tran et al).

Regarding claim 13: Tran et al describes the similar seek functions (tape data location) in col. 11, lines 15-62 that depended on time-based servo signals which encompassed a servo controller having a seeking mode in which the servo controller depends primarily on the time-based servo signals.

Regarding claim 14: Tran et al teaches that the servo controller depends on position error signal produced by the amplitude-based servo signals at servo track boundaries (in col. 9, line 50 to col. 10, line 13 and col. 7, line 61 to col. 8, line 35 of Tran et al).

Regarding claim 15: Tran et al teaches that a servo controller having a tracking mode in which a DC portion of position error signal is obtained from the time-based servo signal (in col. 18, lines 37-65 of Tran et al).

Regarding claim 16: Tran et al teaches that a servo controller having a tracking mode in which a high frequency (double carrier frequency) portion of the position error signal is obtained from the amplitude-based servo signals (in col. 18, lines 37-65 of Tran et al).

Regarding claims 17-21 and 24-30: method claims (17-21 and 24-30) are drawn to the method of using the corresponding apparatus claimed in claims (1-5, 7-8 and 10-16). Therefore method claims (17-21 and 24-30) correspond to apparatus claims (1-5, 7-8 and 10-16) and are rejected for the same reasons of anticipation as used above.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims (6, 9 and 22-23) are rejected under 35 U.S.C. 103(a) as being unpatentable over Tran et al (6134070) in view of Behr (5055951).

Regarding claims 6, 9 and 22-23: the reason for Tran et al is stated in above rejections. Tran et al fails to mention cross-talk and/or slant angle (or skew) between the head (or gap) and the tape for cross-talk; even though, the offsetting servo signals (bursts) are well known for compensating the cross-talk

of the signals between two signal placements. Behr is relied for teaching cross-talk and skew (see col. 3, line 46 to col. 4, line 10 and col. 5, lines 47-68 of Behr).

It would have been obvious to one ordinary skill in the art at the time of the invention was made to modify the servo control of Tran et al with the cross-talk control as taught by Behr. The rationale is as follows: one of ordinary skill in the art would have been motivated to provide an increase in system reliability and maximizing number of recording track as suggested in col. 3, lines 40-45 of Behr. Additionally, it is well known that the cross-talk control can be mechanically control (i.e. skewing gap/head) and/or electrically control (time and/or phase displacements of the servo signals - see col. 6, line 60 to col. 7, line 9 of Behr, and, col. 18, lines 37-65 and col. 17, lines 21-52 of Tran et al), especially, when no unexpected results seem to occur. Thus, such control choices are available to the artisan in the art in one's endeavor of the cross-talk control. See *In re Ruff,* 256 F.2d 590, 118 USPQ 340 (CCPA 1958) and *In re Scott*, 323 F.2d 1016, 139 USPQ 297 (CCPA 1963).

Claims (31-35) are rejected under 35 U.S.C. 103(a) as being unpatentable over Beck et al (6700729) in view of Tran et al (6134070).

Regarding claim 31: Beck et al discloses a magnetic data read-while-write head (see col. 14, lines 27-57 where Beck et al describes the well known benefits of the multiple channel recording/reading devices which includes read-while-write or read-after-write), including:

a) two pairs of oppositely arranged encoded (element 41 in figure 3 and col. 8, lines 12-20 of Beck et al - time-based) servo reading gaps and amplitude-

based servo reading gaps (element 31 – alignment, see col. 11, line 31 to col. 13, line 19 of Beck et al) that are larger than the encoded servo (time-based servo) reading gaps (see figure 3-3C and associated description for details); and

b) between the pairs of oppositely arranged servo reading gaps, matched thin film magnetoresistive data read/write gaps (see figure 18B and col. 10, lines 5-10; col. 14, lines 26-35 and col. 19, lines 36-39 of Beck et al).

Although Beck et al discloses timing in col. 12, lines 16-33, Beck et al fails to mention the time-base servo (or servo code that encompassed with timing (phase) element). Tran et al is relied on the encoded servo code with timing element (or time-base servo) – see col. 10, line 53 to col. 11, line 25; col. 12, line 34 to col. 13, line 30 and figures 5A-6 of Tran et al.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the encode servo signal of Beck et al with the timing element as taught by Tran et al. the rationale is as follows: one of ordinary skill in the art would have been motivated to provide an unique encoded servo information for positioning the head along the length of the tape as suggested in col. 5, lines 45-55 of Tran et al.

Regarding claim 32: Beck et al teaches that the amplitude-based servo reading gaps are sized for a servo track with approximately equal to a servo track pitch (in col. 6, line 65 to col. 7, line 49 of Beck et al).

Regarding claim 33: Beck et al teaches that the servo reading gaps define gap lines for servo writing (in col. 8, lines 37-64 of Beck et al).

Regarding claim 34: Beck et al a servo writing head (as depicted in figure 3 and see associated descriptions for details), including at least one set of encoded (time-based) servo writing gaps arranged at a slant angle (see figures 3-3C of Beck et al) and at least one set of amplitude-based servo writing gaps, configured so that the head can simultaneously write pulses for an encoded (time-based) servopositioning pattern and erase windows for an amplitude-based servo pattern (see col. 14, lines 27-57 of Beck et al).

Although Beck et al discloses timing in col. 12, lines 16-33, Beck et al fails to mention the time-base servo (or servo code that encompassed with timing (phase) element). Tran et al is relied on the encoded servo code with timing (phase) element (or time-base servo) – see col. 10, line 53 to col. 11, line 25; col. 12, line 34 to col. 13, line 30 and figures 5A-6 of Tran et al.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the encode servo signal of Beck et al with the timing element as taught by Tran et al. the rationale is as follows: one of ordinary skill in the art would have been motivated to provide an unique encoded servo information for positioning the head along the length of the tape as suggested in col. 5, lines 45-55 of Tran et al.

Regarding claim 35: Beck et al depicts in figures 3A and 3C that there is at least one set of oppositely arranged encoded (time-based) servo writing gaps so that the encoded (time-based) servo pulses can be written in either forward or reverse direction.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Fasen (6111719) is cited for slant angled writing gap. Lehureau (4321634), Klumpp et al (4472750), Joannou et al (4685013), Alcudia et al (5121270), McClure et al (5418670) and Akagi et al (6590729) are cited for amplitude-based servo and time-based servo. Harman (5483394), Bui et al (6580581) and Hennecken et al (6710967) are cited for reading-while-writing.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to K. Wong whose telephone number is (703) 305-7772.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Hudspeth can be reached on (703) 308-4825. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

akw

19 Apr 04

DAVID HUDSPETH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600